Chapter 3: Chronic Disease

COPD, Asthma, Cancer, Diabetes, Cardiovascular Disease and Oral Health

Introduction

Chronic diseases such as heart disease, stroke, cancer, and diabetes are among the most common, costly, and preventable of all health problems in the U.S. today. Heart disease, cancer, and stroke are the three leading causes of death for women in the U.S. and in Maine.[1] Nationally, chronic diseases account for 70% of all deaths, or 1.7 million deaths each year. These diseases also cause major limitations in daily living for almost 1 out of 10 Americans (about 25 million people).[2]

Over half of all women of reproductive age have one or more serious risk factors for developing a chronic disease. The annual medical cost for treating chronic disease-related pregnancy complications prior to delivery totals over $1 billion dollars. In addition to monetary expense, chronic conditions experienced during pregnancy take a great toll on the health of a mother and her baby, and in some cases may increase the mother's and child's risk of developing chronic diseases later in life.[3]

Chronic Pulmonary Disease

Chronic Lower Respiratory Diseases are the fourth-leading cause of death among females in the U.S. and in Maine.[4] The most deadly of these diseases is chronic obstructive pulmonary disease (COPD), a group of diseases that cause airflow blockage and breathing-related problems such as emphysema, chronic bronchitis, and in some cases asthma.[5] Smoking is the leading cause of COPD deaths.[6] Other causes of COPD include: air pollution, chemical fumes, or dust.[7]

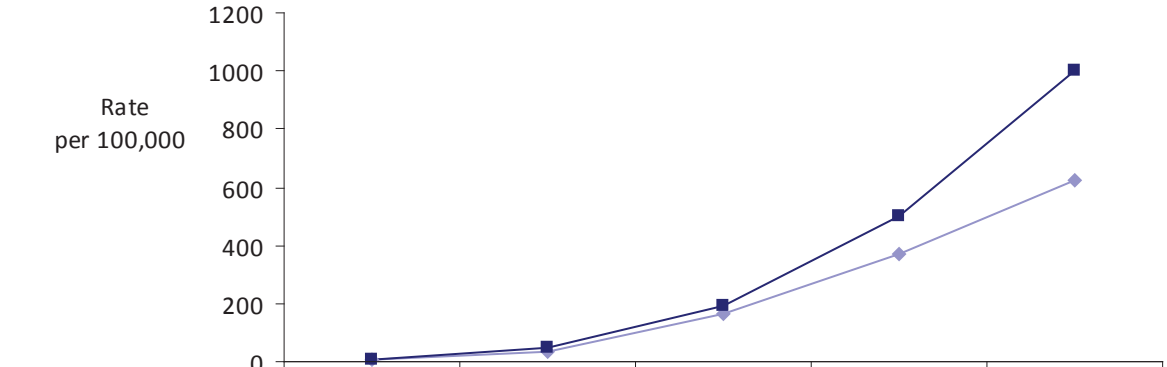
There is growing concern about the increasing prevalence of COPD in the U.S. The number of women dying from COPD in the U.S. and Maine has been increasing and research suggests that physicians are less likely to diagnose COPD among women compared to men. The symptoms COPD manifest differently in women and can have a significant impact on women's quality of life. Studies have shown that COPD symptoms in women are more severe (e.g., greater loss of lung function) and women with COPD exhibit greater levels of anxiety and depression and worse symptom-related quality of life compared to men.[8]

COPD Hospitalizations and Mortality

Mortality and hospitalization rates for COPD were higher among men than women in Maine between 2005 and 2009. On average, approximately 400 women die from COPD each year. Rates of death and hospitalizations increased with age (Figures 3.1 and 3.2; note: mortality is presented as a rate per 100,000 and hospitalizations are presented as a rate per 10,000). Until approximately age 75 years, women are as likely to die or to be hospitalized for COPD as men. However, after age 75 men are more likely to die or be hospitalized because of the disease.[9]

Figure 3.1.

Age-specific COPD mortality rates per 100,000 by sex, Maine, 2005-2009

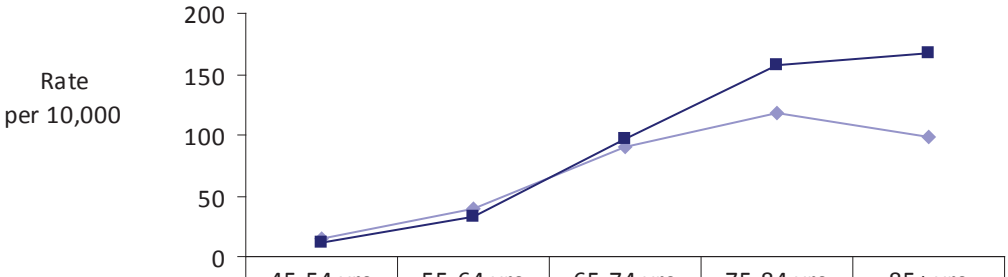


	45-54 yrs	55-64 yrs	65-74 yrs	75-84 yrs	85+ yrs
Female Death Rate	9.1	36.5	165.2	369.2	624.0
Male Death Rate	9.4	49.2	195.2	499.5	999.8

Source: Maine Vital Records Data[9]
Note: COPD= ICD10 codes J40-J44, excludes asthma, among those age 45+

Figure 3.2.

Age-specific COPD hospitalization rates per 10,000 by sex, Maine, 2005-2009



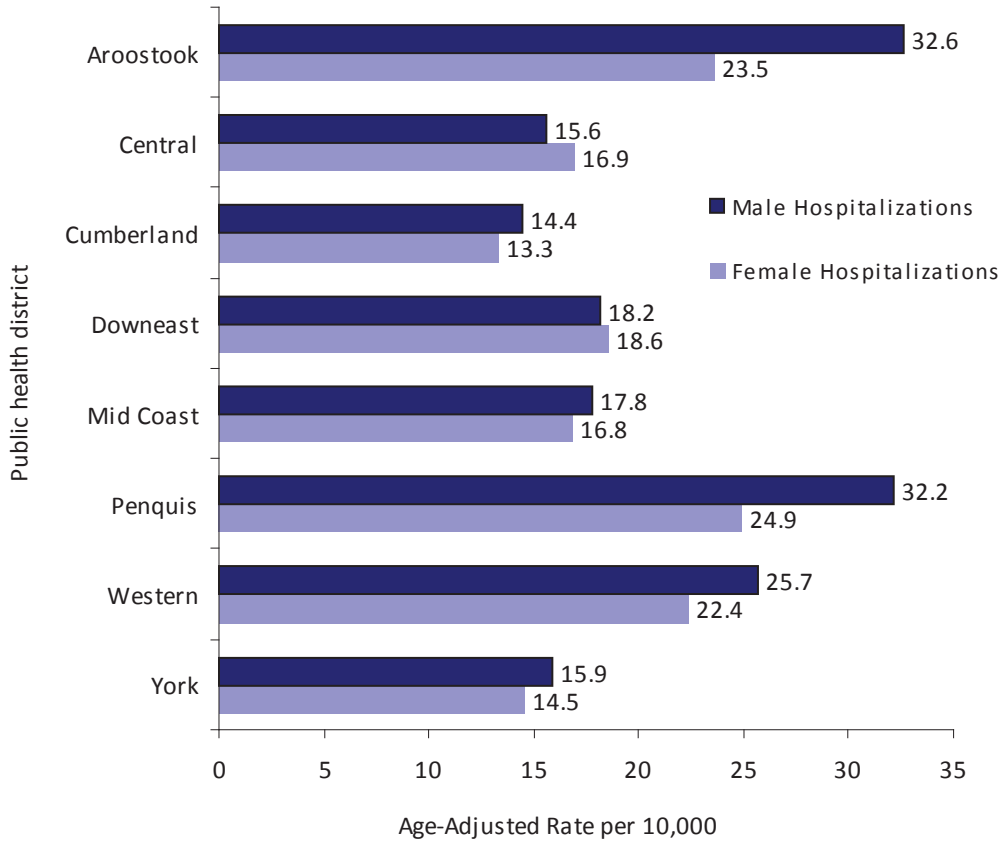
	45-54 yrs	55-64 yrs	65-74 yrs	75-84 yrs	85+ yrs
Female Hospitalization Rate	14.5	38.7	90.5	117.2	98.2
Male Hospitalization Rate	11.7	32.5	96.4	156.6	168.0

Source: Maine Hospital Discharge Data[10] Note: COPD=ICD-9CM codes 490-492, 496

Hospitalization rates for COPD among women in Aroostook, Penquis and Western public health districts were statistically higher than other public health districts in Maine. The two southern districts (Cumberland and York) had the lowest rates of hospitalizations (Figure 3.3). In Aroostook, Penquis and Western districts, men were more likely than women to be hospitalized for COPD. There were no other significant sex differences within districts.[10]

Figure 3.3.

Age-adjusted COPD hospitalization rates per 10,000
by sex and public health district, Maine, 2005-2009



Source: Maine Hospital Discharge Data[10]

Asthma

Asthma is a chronic respiratory disease associated with inflammation of the airways. Although there is no cure, symptoms can be controlled and prevented.[11, 12] Asthma is characterized by attacks with symptoms such as shortness of breath, coughing, wheezing and chest pain.[11-13] Factors which trigger asthma attacks include: allergens, dust mites, air pollutants, smoke, respiratory infections, physical activity, stress, and cold air.[14] The exact cause of asthma is unknown, however genetic and environmental factors (such as exposure to cigarette smoke, living in an urban area and obesity) may increase the risk of developing asthma.[14, 15]

Among children, asthma is more common in boys compared to girls, but this pattern reverses with age; asthma is more common among women compared to men.[12] Asthma also tends to be more prevalent for individuals living in northeastern states,[12] children, adult women, Blacks, and individuals with income below the federal poverty level.[13] If asthma is not managed properly, it can lead to increased medical costs due to high rates of hospitalizations and emergency room visits, and decreased school and work productivity due to absences.[12, 13]

Prevalence

In 2009, approximately 1 in 8 Maine women (13.4%) had been diagnosed with asthma and still have asthma. This was higher than the U.S. prevalence of 10.7%. Rates of asthma among women have not increased significantly over the past five years (Table 3.1).[16]

Sex

Women in Maine and in the U.S. have higher rates of asthma compared to their male counterparts. This disparity has been consistent over time; rates have not changed significantly since 2005 (Table 3.1).[16]

Table 3.1. Current asthma prevalence by sex, U.S. and Maine, 2005-2009

	Maine Women		US Women	Maine Men	
Year	%	(95% CI)	Median % *	%	(95% CI)
2005	12.6	(10.8 - 14.4)	10.3	7.7	(6.0 - 9.4)
2006	12.2	(10.6 - 13.8)	10.4	7.0	(5.5 - 8.5)
2007	13.1	(11.7 - 14.5)	10.4	7.2	(5.8 - 8.6)
2008	13.2	(11.8 - 14.6)	10.7	7.2	(5.9 - 8.5)
2009	13.4	(12.2 - 14.7)	10.6	8.0	(6.6 - 9.4)

Source: BRFSS[16]
*Based on 51 states

Age

Younger women are more likely than older women to report that they currently have asthma; 16.3% of women 18-24 years old reported having asthma, compared to 9.5% of women 75+ years old (Table 3.2). Among adults aged 25-74 years, asthma is more prevalent among women compared to men. The gender gap is smaller for those aged 18-24 years and those over age 75 years.[16]

Table 3.2. Current asthma prevalence in adults by age and sex, Maine, 2005-2009.

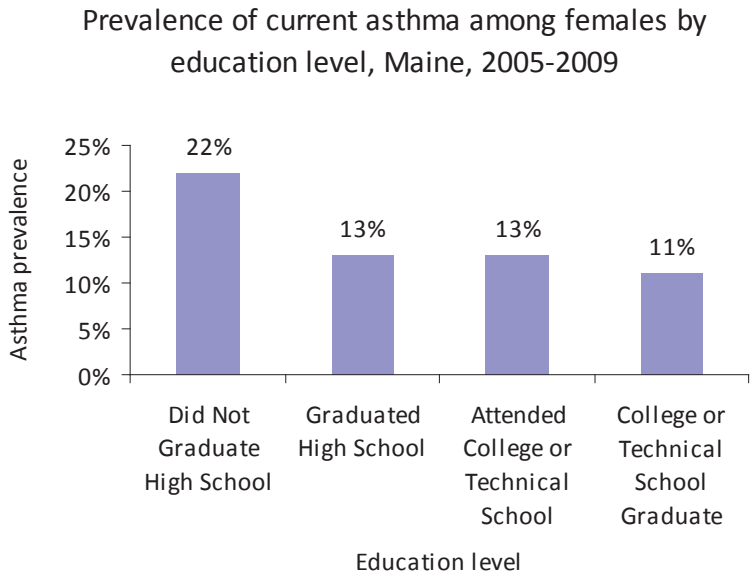
	Women		Men	
Age	%	(95% CI)	%	(95% CI)
18-24	16.3	(12.5 - 20.2)	11.0	(8.2 - 14.6)
25-34	15.4	(13.5 -17.3)	6.8	(5.0 - 8.6)
35-44	14.3	(12.7 - 15.8)	7.5	(6.1 - 8.9)
45-54	12.6	(11.4 - 13.8)	6.7	(5.6 - 7.9)
55-64	10.5	(9.4 - 11.6)	6.6	(5.5 - 7.7)
65-74	11.2	(9.8 - 12.6)	6.5	(5.1 - 7.9)
75+	9.5	(8.1 - 10.8)	7.0	(5.2 - 8.7)

Source: BRFSS[16]

Education Level

The percentage of women with current asthma was higher among those who did not graduate high school (22%) compared to those with at least a high school degree (11%-13%; Figure 3.4).[16]

Figure 3.4.

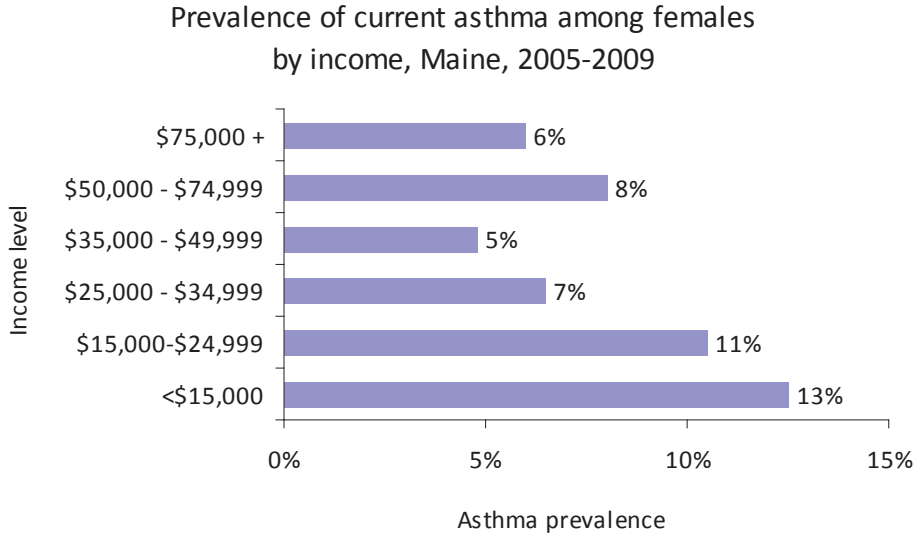


Source: BRFSS[16]

Income

Generally, women with higher annual household income were less likely to have current asthma compared to lower income women. The prevalence of asthma among women with household incomes less than $25,000 was statistically higher than women whose household incomes were greater than $25,000 (Figure 3.5).[16]

Figure 3.5.



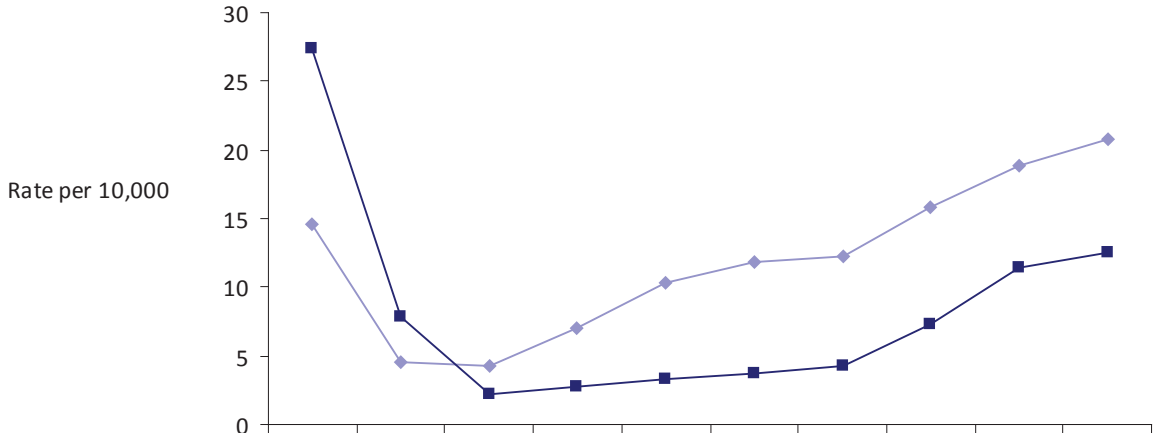
Source: BRFSS[16]

Asthma Hospitalizations and Emergency Department Visits

Similar to the pattern of asthma prevalence, hospitalization rates for asthma were higher for males than females up to 14 years of age, but among those over age 15, females had higher rates than males (Figure 3.6). Hospitalization rates for asthma were highest among very young children (less than five years of age). However, among those aged 15 and older, hospitalization rates increased with age (Figure 3.6).[10]

Figure 3.6.

Age-specific asthma hospitalization rates per 10,000 by sex, Maine, 2005-2009



	0-4 yrs	5-14 yrs	15-24 yrs	25-34 yrs	35-44 yrs	45-54 yrs	55-64 yrs	65-74 yrs	75-84 yrs	85+ yrs
Female Hospitalization Rate	14.6	4.6	4.2	7.0	10.3	11.8	12.3	15.8	18.9	20.8
Male Hospitalization Rate	27.4	7.8	2.2	2.7	3.4	3.8	4.3	7.3	11.5	12.5

Source: Maine Hospital Discharge Data[10]

A different age distribution emerges for emergency department visits. Among females, the rate of emergency department visits for asthma was highest among those 15-34 years old. For males the rate was highest among those 0 – 4 years old (Table 3.3). However, similar to hospitalizations, females over age 15 years were more likely than males to visit the emergency department due to asthma.[10, 17]

Table 3.3. Asthma emergency department visit rates (ICD-9 493, Principal) by age and sex, Maine, 2004-2008.

	Female			Male		
Age	# ED Visits	Rate*	(95% CI)	# ED Visits	Rate*	(95% CI)
0-4	1287	76.3	(72.2 - 80.6)	2574	143.8	(138.3 - 149.4)
5-14	1953	51.9	(49.6 - 54.2)	3333	84.6	(81.7 - 87.5)
15-34	9341	117.3	(114.9 - 119.7)	5710	70.4	(68.6 - 72.2)
35-64	10310	69.8	(68.5 - 71.2)	4815	33.9	(32.9 - 34.8)
65+	2612	47.0	(45.3 - 48.9)	1288	31.1	(29.4 - 32.9)

*Rates are expressed per 10,000 population. Data sources: Emergency department data: Maine Outpatient Hospital Discharge Data.[10]

Maine women in Penquis, Aroostook, and Western public health districts had the highest rates of hospitalization for asthma between 2005 and 2009. In all counties, more females than males were hospitalized for asthma (Table 3.4).[10]

Table 3.4. Asthma hospitalization counts and rates by sex and public health district, Maine, 2005-2009.

	Female Hospitalizations			Male Hospitalizations		
PH District	Count	Rate per 10,000	(95% CI)	Count	Rate per 10,000	(95% CI)
Aroostook	278	12.9	(11.3 - 14.6)	142	7.7	(6.4 - 9.1)
Central	416	9.0	(8.1 - 9.9)	216	5.6	(4.9 - 6.4)
Cumberland	511	6.7	(6.1 - 7.3)	324	5.2	(4.6 - 5.8)
Downeast	235	9.9	(8.6 - 11.3)	152	7.6	(6.4 - 8.9)
Mid Coast	474	10.8	(9.8 - 11.9)	198	5.7	(4.9 - 6.5)
Penquis	638	13.8	(12.7 - 14.9)	320	8.2	(7.3 - 9.2)
Western	615	12.3	(11.3 - 13.3)	347	7.8	(7.0 - 8.7)
York	380	7.0	(6.3 - 7.8)	225	4.9	(4.3 - 5.6)

Source: Maine Hospital Discharge Data[10]

Cancer

Cancer is the abnormal growth of cells in various parts of the body.[18] Cancers were the 2nd leading cause of death among all females in the U.S. in 2007, and the leading cause of death among women aged 35-64 years.[19] In Maine, cancer was the leading cause of death among females between 2004-2008.[9]

The cost of cancer is often measured in number of lives lost; however physical, emotional, and social challenges are also shouldered by cancer survivors, as well as their family members, friends, and caregivers. The financial costs of cancer also are large. According to the National Institutes of Health, cancer cost the U.S. an estimated $263.8 billion in medical costs and lost productivity in 2010.[20]

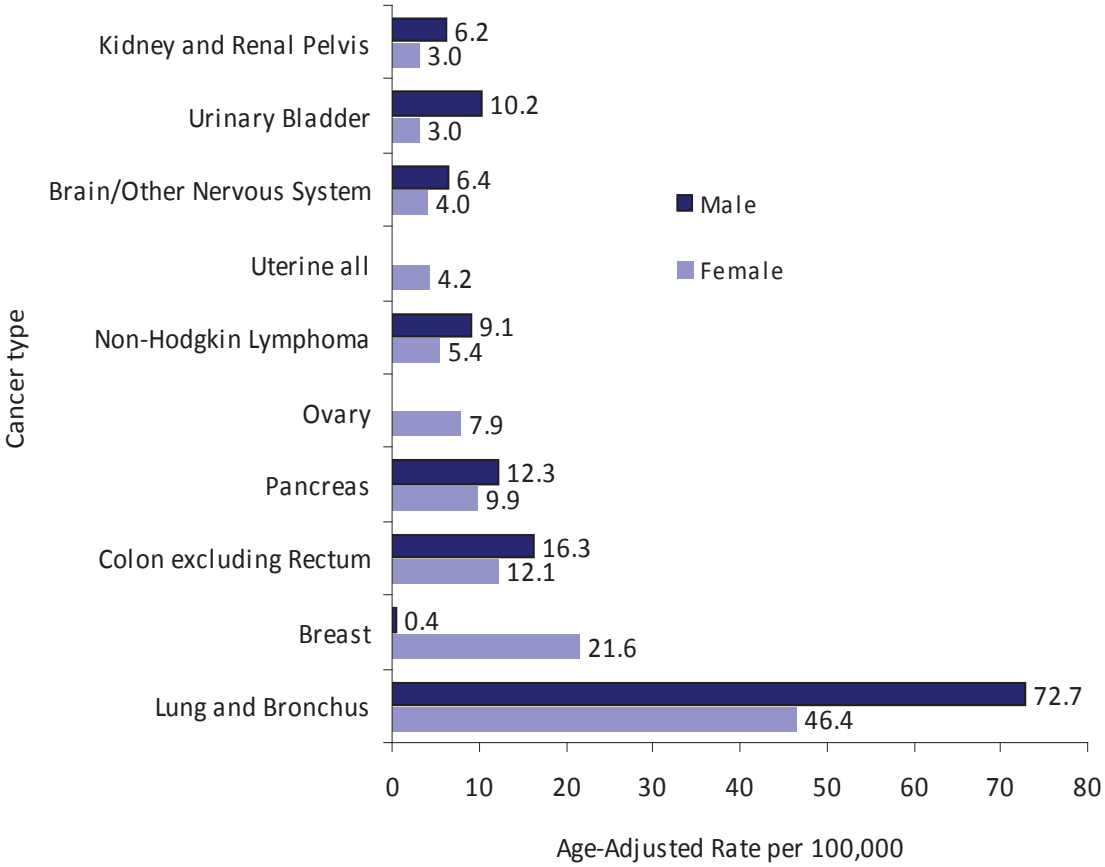
Cancer risk can be reduced by avoiding tobacco, limiting alcohol use and exposure to ultraviolet rays from the sun and/or tanning beds, eating a diet rich in fruits and vegetables, maintaining a healthy weight, being physically active, and seeking regular medical care.[20] Research shows that screening for cervical and colorectal cancer at recommended intervals can help prevent these diseases. Screening also can help identify cervical, colorectal, and breast cancers at an early, treatable stage (see Chapter 8 for data on cancer screening). Vaccines also reduce cancer risk. The human papillomavirus (HPV) vaccine helps prevent some cervical, vaginal, and vulvar cancers. Making cancer screening, information, and referral services available and accessible to all Americans can reduce cancer incidence and deaths.[20] Better treatment and new screening technologies may allow us to identify more cancers earlier, and prevent more cancer deaths.

Mortality

Lung cancer is the leading cause of cancer death for females in Maine and the U.S., although the rate of mortality is higher among males. Breast cancer is the second leading cause, and colon cancer is the third leading cause of cancer-related death among females in Maine, as well as the U.S. (Figure 3.7).[9, 19]

Figure 3.7.

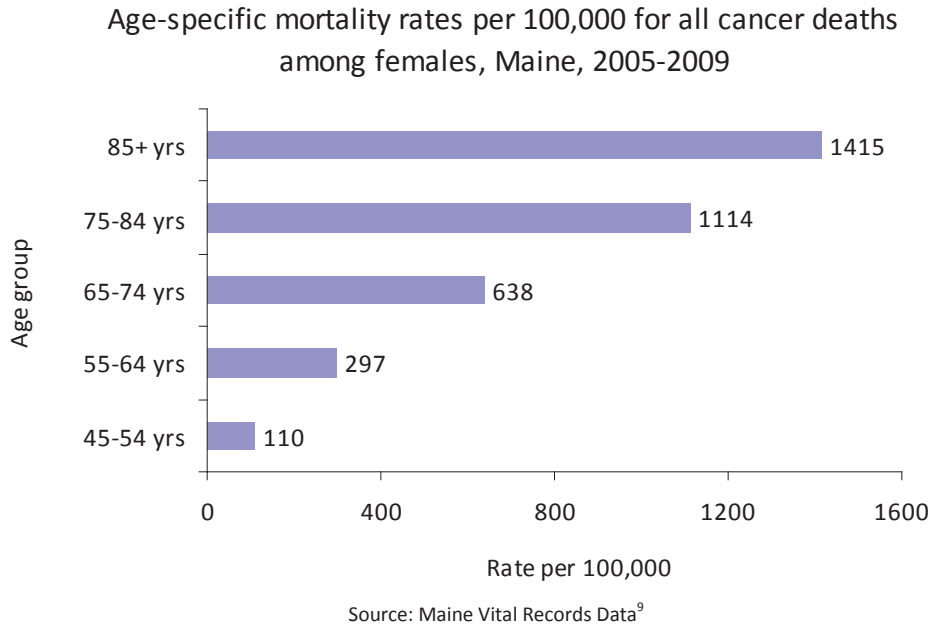
Age-adjusted mortality rates per 100,000 for the 10 leading causes of female cancer deaths by sex, Maine, 2005-2009



Source: Maine Vital Records Data[9]

Cancer death rates increase substantially with age, from 110 per 100,000 Maine women aged 45-54 years to over 1400 per 100,000 women aged 85 years and older (Figure 3.8).[9]

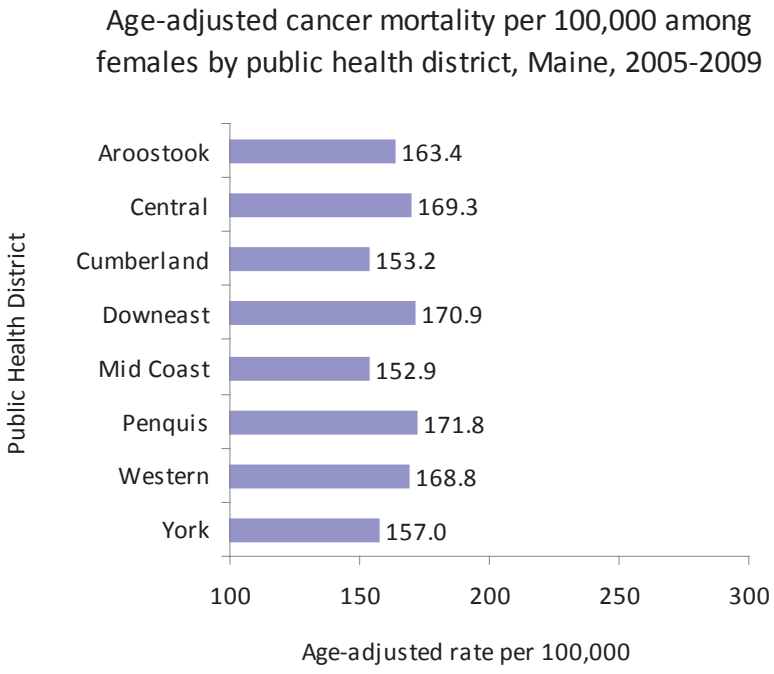
Figure 3.8.



Source: Maine Vital Records Data[9]

Based on cancer mortality rates from 2005-2009, there were no statistically significant differences in the rate of deaths by cancer among females by public health district (Figure 3.9).[9]

Figure 3.9.



Source: Maine Vital Records Data[9]

Incidence

Compared to the U.S. females, Maine females had a higher incidence of lung cancer in 2008. The incidence rates of colorectal, ovarian, and breast cancer in Maine in 2008 were not statistically different from the U.S. (Table 3.5).[21]

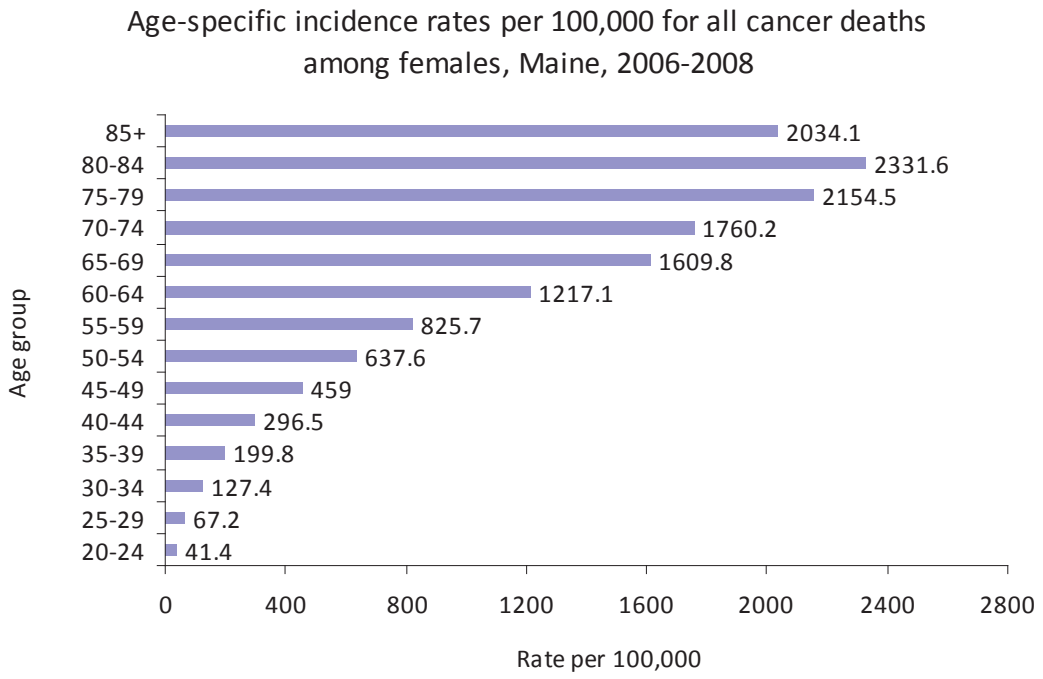
Table 3.5. Age-adjusted cancer incidence rates among females by cancer type, U.S. and Maine, 2008.

	Maine		United States*	
Cancer Type	**Rate****	**(95%CI)**	**Rate****	**(95%CI)**
Colorectal	39.9	(35.8 – 44.3)	38.7	(38.4 – 39.0)
Ovarian	11.2	(9.0 – 13.7)	12.2	(12.0 – 12.4)
Breast	124.8	(117.3 – 132.6)	121.9	(121.4 – 122.4)
Lung and Bronchus	65.1	(59.9 – 70.7)	54.5	(54.2 – 54.9)

*All Races
**Age-adjusted rate per 100,000
Maine: Source: Maine Annual Cancer Report 2011.[21]
US:Source: State Cancer Registry and the CDC's National Program of Cancer Registries Cancer Surveillance System (NPCR-CSS) November 2010 data submission. State rates include rates from metropolitan areas funded by SEER.[22, 23]

Maine cancer incidence rates, similar to mortality rates, increase with age. Between 2006-2008, the highest cancer incidence rates among females were among those over age 65 years (Figure 3.10).[21]

Figure 3.10.

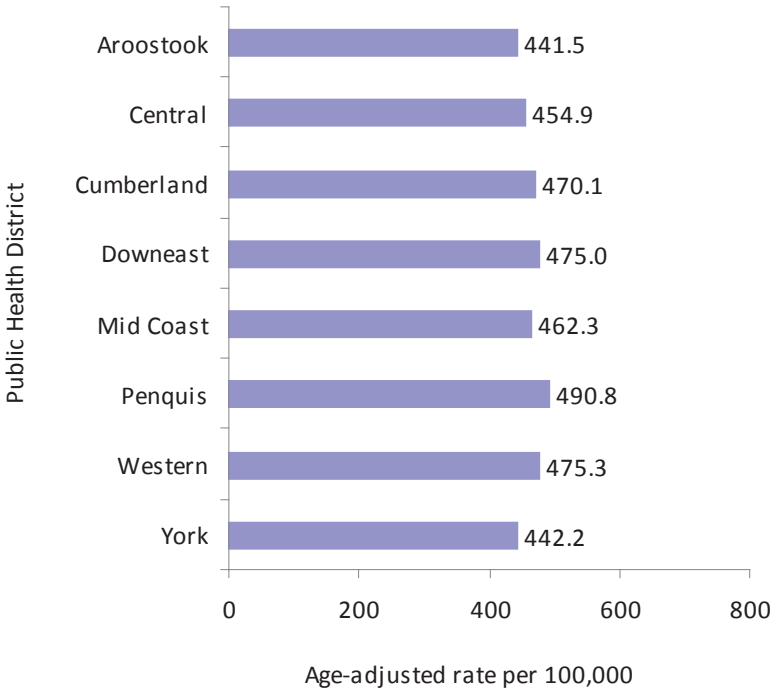


Source: Maine Cancer Report 2011[21]

Similar to cancer mortality, cancer incidence rates among females in Maine do not vary significantly by public health district (Figure 3.11).[21]

Figure 3.11.

Age-adjusted cancer incidence rates per 100,000 among females by public health district, Maine, 2006-2008



Source: Maine Cancer Report 2011[21]

Cardiovascular Disease

Cardiovascular diseases (CVD) include conditions which cause abnormal functioning of the heart and blood vessels[24]; these include:[25]

- Hypertension or high blood pressure (HBP)
- Coronary heart disease (CHD; which includes heart attack and chest pain)
- Heart failure
- Stroke

Substantial progress has been made in decreasing the burden of CVD among women. Rates of CHD among women have declined from 263.3 per 100,000 in 1980 to 95.7 in 2007.[25] Despite these gains, in the U.S. and Maine, cardiovascular diseases (CVD), including heart disease and stroke, are a leading cause of death, hospitalization and health care cost. According to 2007 national mortality data, 1 in every 3 women died of CVD. More women died of CVD than cancer, chronic lower respiratory disease, Alzheimer's disease, and unintentional injury combined.[25]

Prevention and education about cardiovascular disease has traditionally been focused on men. In 1997, only 30% of women surveyed as part of a national American Heart Association (AHA) study knew that CVD was the leading cause of death for women.[26] However, there has been increased awareness of the scope of the disease among women. In a follow-up AHA study in 2005, the rate of awareness of CVD as the leading cause of death increased to 55%, but less than half of the women surveyed were aware of healthy levels of risk factors.[27] Furthermore, many physicians may still not be aware of CVD risks among women. A 2004 national survey found that only 1 in 5 physicians knew that more women than men die each year of CVD.[28]

The direct and indirect economic costs of cardiovascular disease in the U.S. are estimated at $286 billion. Cost estimates for Maine are less readily available, but in a 2007 report, the Milken Institute estimated direct and indirect cost due to chronic diseases in the U.S. and by state for 2003. This report estimated in 2003 alone total direct costs for Maine were $230 million for heart disease, $70 million for stroke, and $150 million for hypertension. In addition, total indirect costs for Maine in 2003 were estimated at $450 million for heart disease, $120 million for stroke, and $1,333 million ($1.3 billion) for hypertension.[29]

Recent evidence suggests that there are some risk factors for CVD that are unique or more common among women, such as preeclampsia during pregnancy, gestational diabetes, depression, lupus, and rheumatoid arthritis.[30] Women can decrease their risk of CVD by not smoking, maintaining a healthy diet, engaging in physical activity, maintaining a healthy body mass index (BMI), and lowering their blood pressure and cholesterol.[30] There is evidence that assessing and addressing clinical and lifestyle risk factors for cardiovascular disease can reduce risk of first incidence and recurrence of events related to CVD.[30]

This chapter will address two risk factors associated with cardiovascular disease: high cholesterol and hypertension, as well as the two most common forms of cardiovascular disease: heart disease and stroke.[31] A discussion of some of the other risk factors associated with CVD such as obesity, poor nutrition and tobacco use can be found in Chapter 7.

Hypertension and High Cholesterol

Hypertension (high blood pressure) is defined as having systolic pressure greater or equal to 140 mm Hg or diastolic pressure greater or equal to 90 mm.[32] Hypertension increases risk for heart disease and stroke because the heart is weakened by the extra strain of pumping blood and oxygen throughout the body.[24, 25, 33]

Risk factors for the development of hypertension include: age, ethnicity, family history of hypertension, low SES, greater body weight, low levels of physical activity, tobacco use, stress, and dietary factors.[25] Women who use oral contraceptives are at increased risk of hypertension if they are overweight, have a family history of hypertension or have mild kidney disease.[24] Women who have high blood pressure that is left untreated during pregnancy may risk harming themselves and the baby.[24]

High blood pressure can be treated by reducing excess weight, avoiding excess dietary salt, reducing alcohol intake, and by taking prescription drugs if prescribed.[24, 32]
Men have a greater risk than women of developing high blood pressure until around age 55, when the risk becomes similar for both men and women. Women aged 75 and older are more likely to have high blood pressure than men in the same age cohort.[24] In the U.S. between 2005 and 2008, the prevalence of hypertension was highest among elderly (65 years or older), non-Hispanic Blacks, and those with Medicare coverage.[34]

The U.S. Preventive Services Task Force recommends screening for high blood pressure among all adults over age 18 years. They based their recommendation on the strong evidence linking high pressure to CHD and the effectiveness of treatments for high blood pressure.[35]

Cholesterol is a waxy, fat-like substance which the body needs a certain amount of to function properly.[36] If too much of a certain kind of cholesterol (low-density lipoprotein (LDL)) accumulates in the arteries, they become narrowed, making it difficult for blood to pass through to areas of the body that need it.[37, 38] Sometimes the narrowing of the artery results in a complete blockage, which can lead to a heart attack.[37] In general, LDL cholesterol levels increase with age.[39] Women's LDL tends to be lower than men's until around age 55, then women tend to have higher levels than men.[39]

Risk factors for high cholesterol include: a diet high in foods which contain saturated fats, trans-fatty acids, cholesterol or triglycerides, being overweight and lack of physical activity,[40] and genetics/family history.[41]

The National Cholesterol Education Program recommends that healthy adults get their cholesterol checked every five years.[42]

More than 1 in 3 women in Maine and the U.S. have high cholesterol, and more than 1 in 4 have hypertension. The prevalence of these conditions among women in Maine is similar to women in the U.S.. The prevalence of self-reported high cholesterol is lower among Maine women than Maine men, but the prevalence of hypertension is similar for men and women (Table 3.6)

Table 3.6. Hypertension and high cholesterol prevalence by sex, U.S. and Maine, 2005-2009.

	Maine Females		US Females	Maine Males	
	%	(95% CI)	Median % *	%	(95% CI)
High Cholesterol	36.1	(34.4 - 37.7)	36.2	42.0	(39.7 - 44.2)
Hypertension	28.7	(27.3 - 30.2)	27.8	31.4	(29.4 - 33.5)

Source: BRFSS[16]
*Based on 51 States

Heart Disease and Stroke

The most common type of **heart disease** in the U.S. is coronary artery disease, which can cause heart attacks, angina, heart failure, and arrhythmias.[43] Coronary artery disease is caused by a build-up of plaque (from cholesterol), which causes narrowing of the arteries.[43] The plaque build-up causes chest pain (angina), and over time the heart muscle becomes weakened, leading to heart failure and arrhythmia, and heart attack if the plaque results in complete blockage of the artery.[43]

Controllable risk factors for coronary artery disease include: high cholesterol, high blood pressure, diabetes, overweight, smoking, lack of physical activity, unhealthy diet and stress. Risk factors that are not modifiable include older age, male gender, and a family history of heart disease.[25]

A **stroke** occurs when the blood vessels that supply blood to the brain burst or become blocked by a clot or other particle, resulting in a lack of oxygen supply to the brain, leading to brain cell death.[24] Stroke can permanently affect speech, motor skills, senses and the ability to understand speech. Paralysis or weakness on one side of the body is a common effect. Emotional effects of stroke include depression, mood swings and laughing or crying for no reason.[24]

In contrast to men, women's risk for stroke typically exceeds their risk for coronary heart disease in middle and older age. Women are more likely than men to suffer from a stroke over the course of a lifetime. In the U.S, women accounted for 60.6% of U.S. stroke deaths in 2007.[25] This is likely because the risk of stroke increases with age and women tend to live longer than men.

Modifiable risk factors for stroke include: tobacco use, physical inactivity and obesity, excessive alcohol use, and the use of some illegal drugs.[24] Non-modifiable risks are similar to CAD and include age, family history of stroke or heart attack and stress. High blood pressure, high blood cholesterol, heart disease, diabetes, previous stroke or "mini-stroke" (transient ischemic attack), and sickle cell disease also increase an individual's risk for stroke.[24]

There are risk factors for stroke that are unique to women. These include birth control pills and hormone therapy; there is also an increase risk of stroke during pregnancy and the postpartum period.[25]

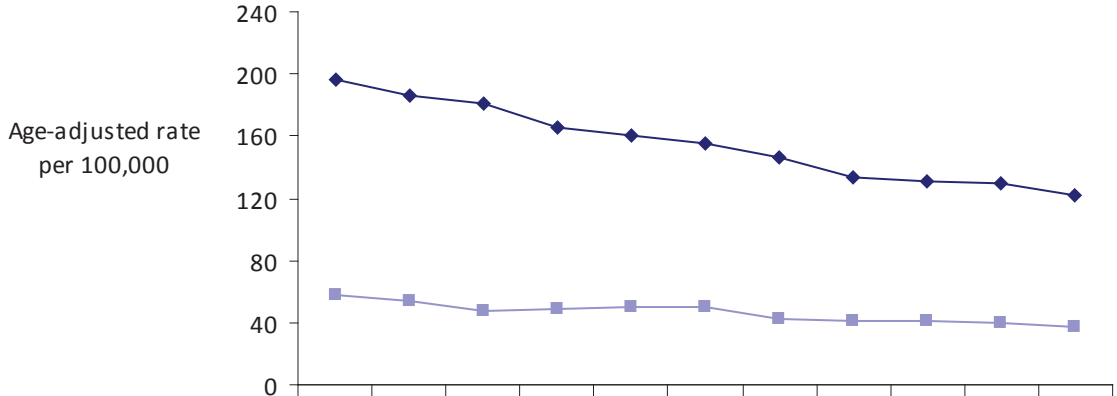
Males are at higher risk of stroke than females. Women who take oral contraceptives and smoke or have high blood pressure increase their risk of stroke.[24]

Heart Disease and Stroke Mortality

There has been a substantial decline in rates of heart disease deaths among Maine women in the past ten years. Women's stroke rate has also declined over time, but to a lesser degree (Figure 3.12).[9] This is similar to national data which have shown that women's stroke mortality rates have decreased at a slower rate compared to men.[25]

Figure 3.12.

Age-adjusted heart disease and stroke mortality rates per 100,000 females by year, Maine, 1999-2009



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Heart Disease Death Rate	196.0	186.0	180.7	165.7	159.9	155.9	146.8	133.2	130.4	129.8	122.3
Stroke Death Rate	57.5	54.4	47.8	49.2	50.1	49.8	42.6	41.3	40.9	39.4	37.5

Source: Maine Vital Records Data[9]

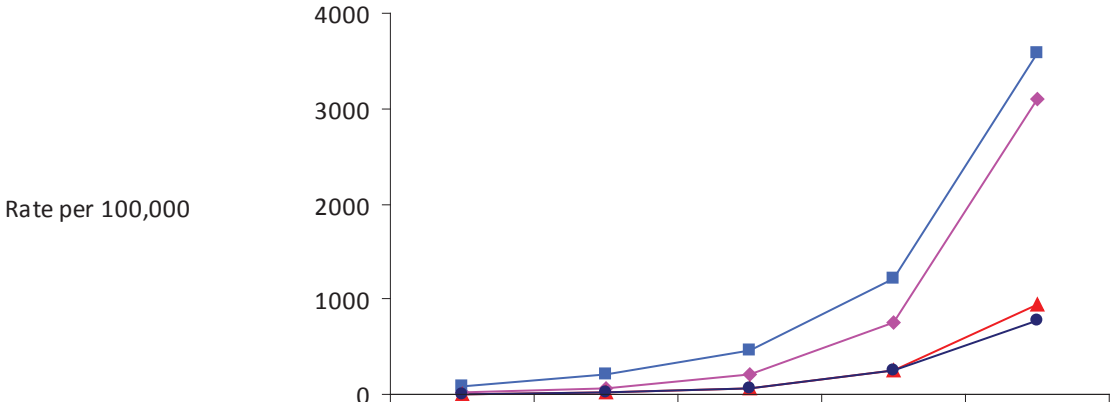
Sex and Age

Based on data from 2005-2009, Maine men had a higher rate of mortality due to heart disease among all age groups compared to Maine women. Some research has found that younger women (<age 50) who have a heart attack are at greater risk of dying in a hospital compared to men of the same age. The reasons for this are not fully understood. Older women (>75 years) are less likely than men in the same age range to die after a heart attack.[44, 45]

In all age categories the mortality rate due to stroke among men was not significantly higher than women. In the oldest age category (85+), women's stroke mortality rate was higher than men's (Figure 3.13).[9]

Figure 3.13.

Age-specific heart disease and stroke mortality rates per 100,000 by condition and sex, Maine, 2005-2009



	45-54 yrs	55-64 yrs	65-74 yrs	75-84 yrs	85+ yrs
Female Heart Disease Rate	24.5	67.5	203.8	752.8	3109.4
Male Heart Disease Rate	85.1	202.0	460.5	1207.6	3573.4
Female Stroke Rate	5.4	15.3	62.6	251.1	934.4
Male Stroke Rate	9.4	19.0	70.9	251.9	784.6

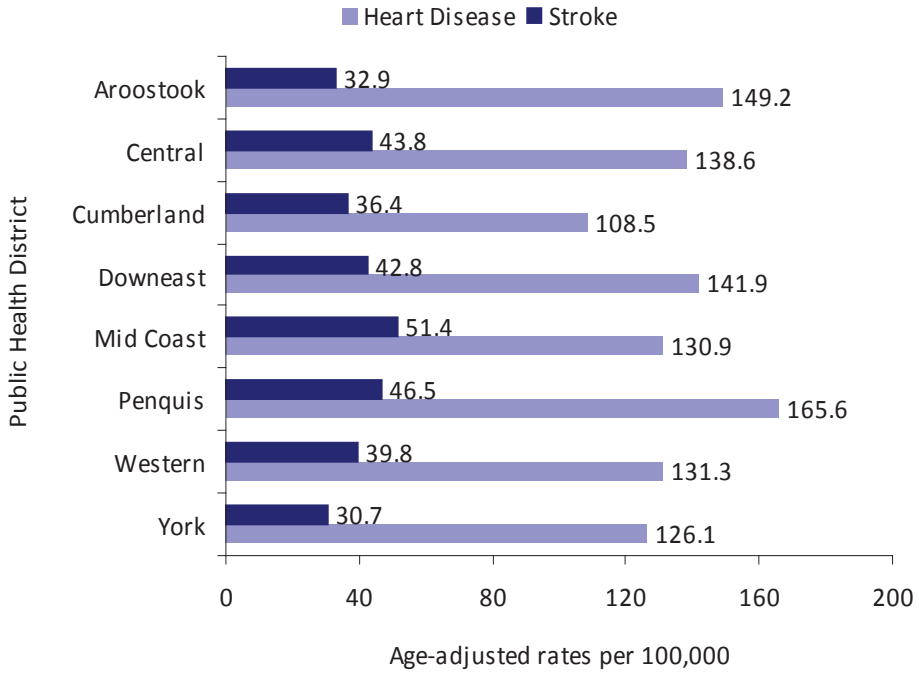
Source: Maine Vital Records Data[9]

Public Health District

Penquis and Aroostook public health districts had the highest rates of heart disease death among females in Maine; Cumberland had the lowest. The rate of stroke death was similar throughout the state (Figure 3.14).[9]

Figure 3.14.

Age-adjusted heart disease and stroke mortality rates per 100,000 among females by public health district, Maine, 2005-2009



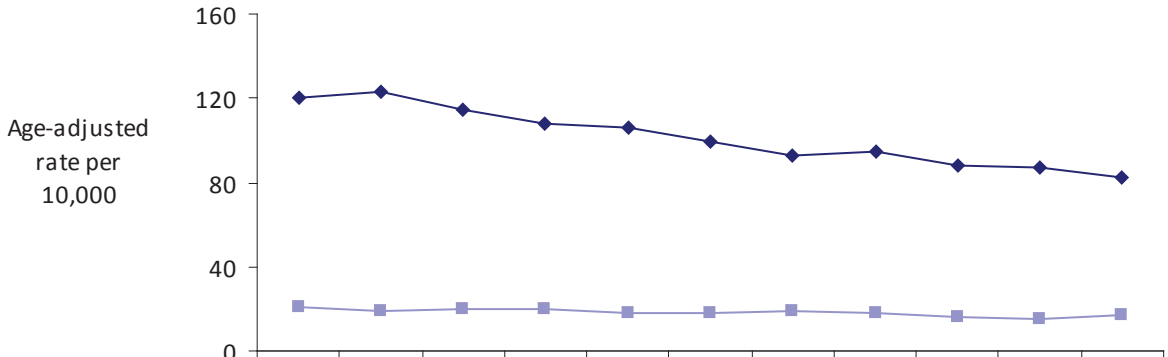
Source: Maine Vital Records Data[9]

Heart Disease and Stroke Hospitalizations

Similar to mortality rates, hospitalization rates for heart disease and stroke among Maine females have declined over the past ten years. This was especially true for hospitalizations for heart disease. During this time, there were more hospitalizations for heart disease than for stroke (Figure 3.15).[10]

Figure 3.15.

Age-adjusted heart disease and stroke hospitalization rates per 10,000 females by year, Maine, 1999-2009



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Heart Disease	119.8	123.5	114.5	107.8	105.6	99.4	92.7	94.7	87.6	87.3	82.7
Stroke	21.0	19.3	19.8	19.9	17.7	18.2	18.5	17.6	16.3	15.5	16.6

Source: Maine Hospital Discharge Data[10]

Age

Similar to mortality, hospitalizations for heart disease and stroke become more common as women age. The highest rates of hospitalization for both heart disease and stroke are among women aged 75-84 years (Table 3.7).

Table 3.7. Age-specific hospitalization rates (per 10,000) of heart disease and stroke among females, Maine, 2005-2009

	Heart Disease			Stroke		
Age	Count	Rate/ 10,000	(95% CI)	Count	Rate/ 10,000	(95% CI)
<5	27	1.58	(1.0 - 2.3)	7	0.4	(0.2 - 0.8)
5-14	34	0.91	(0.6 - 1.3)	8	0.2	(0.1 - 0.4)
15-24	166	3.98	(3.4 - 4.6)	23	0.55	(0.3 - 0.8)
25-34	300	7.99	(7.1 - 8.9)	53	1.41	(1.1 - 1.8)
35-44	1022	21.29	(20.0 - 22.6)	191	3.98	(3.4 - 4.6)
45-54	2823	50.56	(48.7 - 52.5)	620	11.1	(10.2 - 12.0)
55-64	5630	128.44	(125.1 - 131.8)	1148	26.19	(24.7 - 27.7)
65-74	8933	334.61	(327.7 - 341.6)	1893	70.91	(67.7 - 74.2)
75-84	12826	639.03	(628.0 - 650.2)	2957	147.33	(142.1 - 152.7)
85+	9052	952.5	(933.0 - 972.3)	2354	247.7	(237.8 - 257.9)

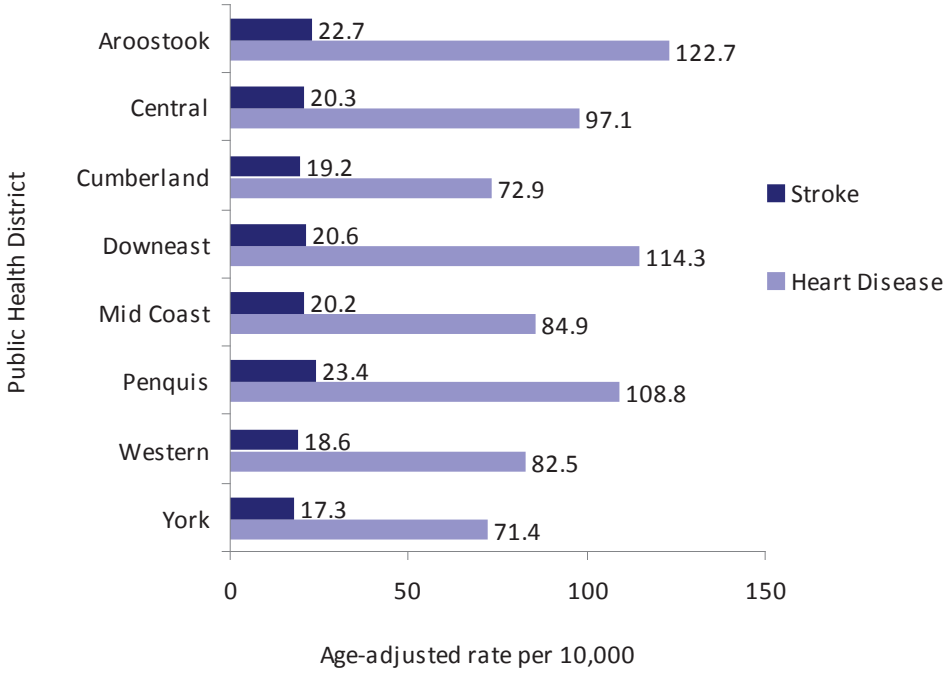
Source: Maine Hospital Discharge Data[10]

Public Health District

Penquis, Downeast and Aroostook districts had higher female hospitalization rates for heart disease than the other public health districts in Maine. Penquis and Aroostook districts also had higher female stroke hospitalization rates than most of the other public health districts (Figure 3.16).[10]

Figure 3.16.

Age-adjusted heart disease and stroke hospitalization rates per 10,000 among females by public health district, Maine, 2005-2009



Source: Maine Hospital Discharge Data[10]

Diabetes

Diabetes is a condition in which blood glucose levels are higher than normal due to poor insulin regulation.[46, 47] Diabetes can lead to other health problems and complications. Individuals with diabetes are at increased risk for cardiovascular disease, blindness and vision problems, kidney disease, nervous system disease, and dental diseases.[46] There are 3 types of diabetes: Type I (an autoimmune disease with onset or diagnosis usually during childhood; requires regular insulin injections); Type II (typically develops during adulthood; can be controlled by diet and exercise, but may require insulin or other medication); gestational (develops during pregnancy; it is similar to Type II and can be treated through diet).[31, 46] Individuals with pre-diabetes have higher glucose levels than normal (but not high enough to be classified as diabetes), which may lead to increased risk of developing diabetes and other cardiovascular diseases associated with diabetes.[48]

Non-modifiable risk factors for developing type II diabetes include: family history of diabetes, race (more common among non-Whites) and aging.[46] Modifiable risk factors for type II diabetes include obesity, hypertension, high-calorie diets, physical inactivity, excessive alcohol and tobacco use.[46, 49]

Women who have diabetes and become pregnant are at increased risk for birth defects and other pregnancy-related complications.[46] Pregnancy and birth-related complications due to diabetes include: babies becoming very large which can lead to a difficult birth and babies at high risk for becoming obese and developing diabetes.[50] Although gestational diabetes goes away after the baby is born, women who develop gestational diabetes are at increased risk for developing Type II diabetes.[31, 50] The Institute of Medicine's 2011 Committee on Preventative Services for Women recommends that pregnant women between 24 and 28 weeks of gestation be screened for diabetes, or at the first prenatal visit if they are considered high risk.[51]

Diabetes Prevalence

Sex

In Maine, data on the prevalence of diabetes come from self-reported data on the Maine BRFSS. Based on this survey, about 8% of women in Maine have been diagnosed with diabetes. Between 2005 and 2009, the prevalence of diabetes among females and males was similar and the prevalence of diabetes among Maine women was not significantly different than U.S. women in 2009. The percentage of Maine females and males with self-reported diabetes in Maine has not changed significantly over time (Table 3.8).[16]

Table 3.8. Diabetes prevalence by sex, U.S. and Maine, 2005-2009.

	Maine Females		US Females	Maine Males	
Year	%	(95% CI)	Median % *	%	(95% CI)
2005	7.2	(6.1 - 8.3)	7.1	7.8	(6.3 - 9.3)
2006	6.6	(5.6 - 7.6)	7.1	7.3	(6.0 - 8.6)
2007	7.1	(6.3 - 7.9)	7.9	8.6	(7.4 - 9.8)
2008	6.6	(5.8 - 7.4)	7.9	10.1	(8.8 - 11.4)
2009	7.9	(7.1 - 8.7)	8.2	8.8	(7.8 - 9.8)

Source: BRFSS[16]
*Based on 51 states

In 2008, the percentages of Maine women and men who reported that a doctor told them they had pre-diabetes were similar (Table 3.9).[16]

Table 3.9. Pre-diabetes prevalence by sex, Maine, 2008.

	Females		Males	
Year	%	(95% CI)	%	(95% CI)
2008	6.6	(5.6 - 7.5)	5.6	(4.7 - 6.6)

*Source: BRFSS[16]

Age

For women and men, the percentage of those with diabetes increased with age (Table 3.10). Men over age 45 years were more likely to have diabetes than older women[16]

Table 3.10. Diabetes prevalence in adults by age and sex, Maine, 2005-2009.

	Females		Males	
Age	%	(95% CI)	%	(95% CI)
18-24	0.8	(0.03 - 1.7)	1.6	(0.3 - 2.9)
25-34	1.6	(1.0 - 2.3)	1.8	(0.8 - 2.9)
35-44	3.3	(2.6 - 4.0)	3.6	(2.6 - 4.6)
45-54	6.1	(5.3 - 7.0)	8.2	(7.0 - 9.4)
55-64	10.8	(9.7 - 11.9)	13.5	(12.1 - 15.0)
65-74	15.1	(13.5 - 16.7)	20.2	(18.0 - 22.4)
75+	15.2	(13.5 - 17.0)	19.7	(16.8 - 22.6)

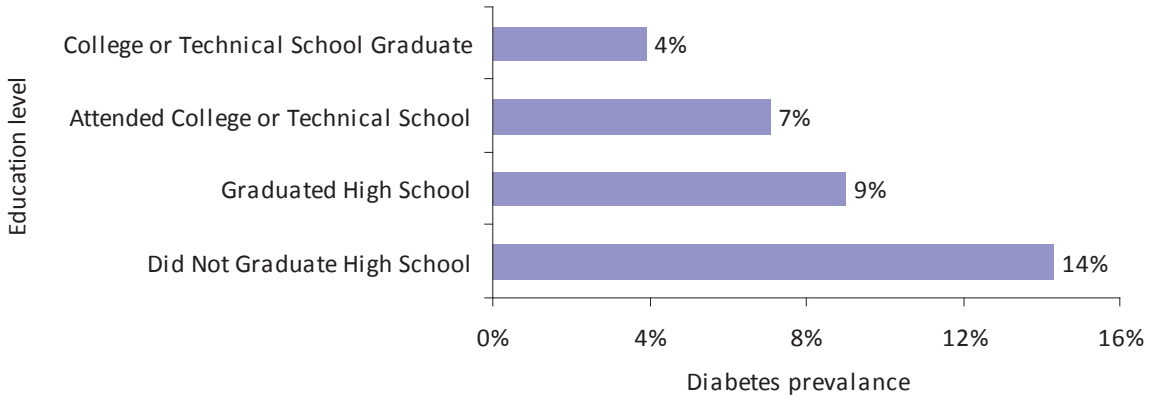
Source: BRFSS[16]

Education Level

Women who had graduated college or technical school experienced a lower incidence of diabetes than those who did not graduate. Of women who did not graduate high school, 14% had been diagnosed with diabetes, compared with 4% of women who graduated college or technical school (Figure 3.17).[16]

Figure 3.17.

Prevalence of diabetes among females by education, Maine, 2005-2009

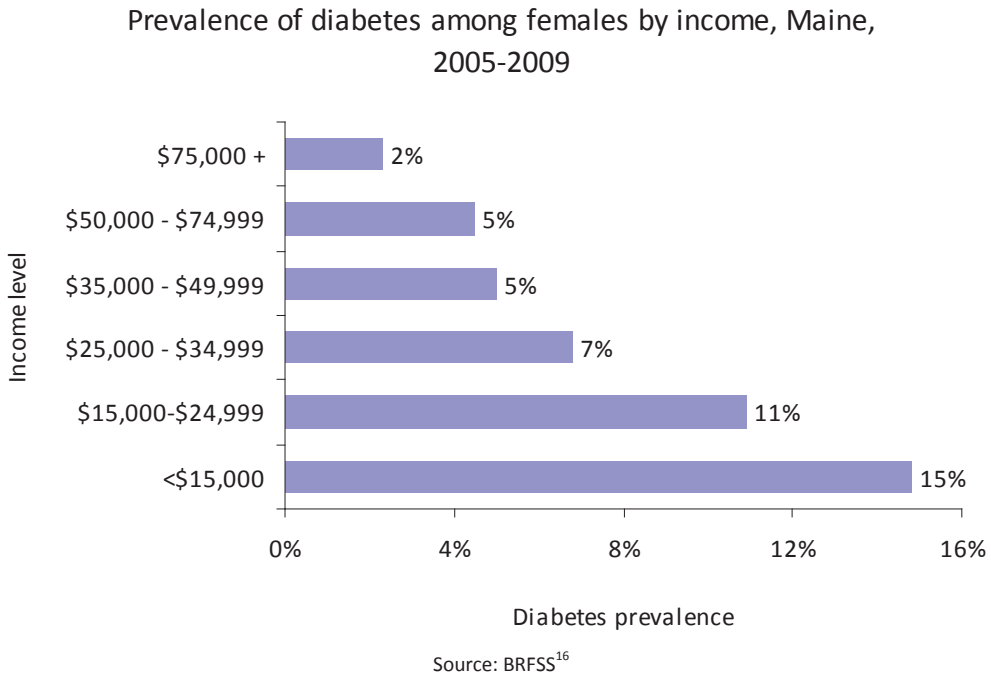


Source: BRFSS[16]

Income

The percentage of women with diabetes decreased as their income increased. Approximately 15% of women with annual household income less than $15,000 had diabetes compared to 2% of women with annual household income of $75,000 or greater (Figure 3.18).[16]

Figure 3.18.



Source: BRFSS[16]

Public Health District

The prevalence of self-reported diabetes was significantly higher for men and women in Aroostook public health district compared to the other six districts (Table 3.11). In most districts, except Western district, there were no significant sex differences in the prevalence of self-reported diabetes. In Western District, men were more likely than women to report having been diagnosed with diabetes.[16]

Table 3.11. Diabetes prevalence by public health district and sex, Maine, 2005-2009.

	Females		Males	
PH District	**%**	**(95% CI)**	**%**	**(95% CI)**
Aroostook	11.5	(9.2 - 13.7)	11.0	(8.4 - 13.5)
Cumberland	5.8	(4.9 - 6.7)	7.3	(6.0 - 8.6)
Central	7.4	(6.2 - 8.6)	9.2	(7.6 - 10.8)
Downeast	6.7	(5.4 - 8.0)	8.2	(6.3 - 10.2)
Midcoast	6.9	(6.0 - 7.9)	7.6	(6.4 - 8.8)
Penquis	8.6	(7.3 - 9.9)	9.6	(7.8 - 11.4)
Western	6.1	(5.0 - 7.1)	8.8	(7.2 - 10.3)
York	6.5	(5.4 - 7.6)	8.1	(6.5 - 9.7)

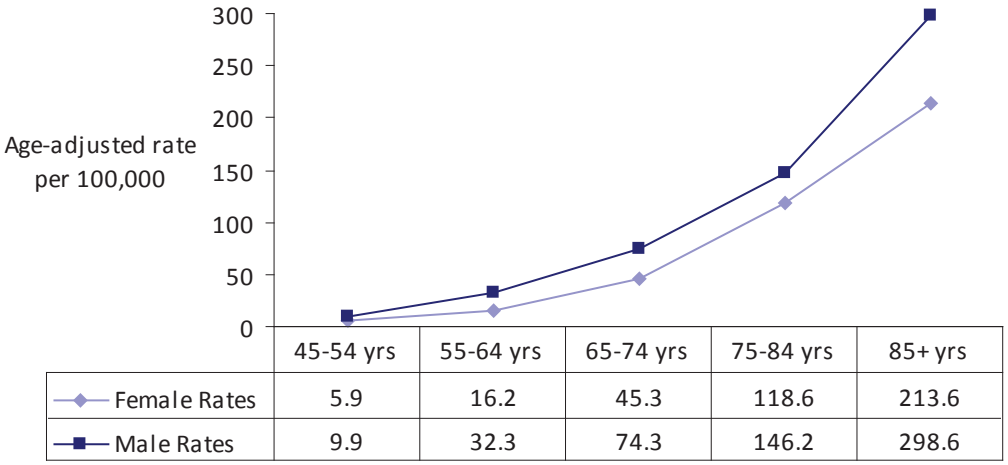
Source: BRFSS[16]

Diabetes Hospitalizations and Mortality

Compared to women, men had higher rates of mortality and hospitalizations from diabetes among all age groups. For both sexes, the rate of mortality and hospitalizations due to diabetes increased with age (Figures 3.18 and 3.19).[9]

Figure 3.19.

Age-specific diabetes mortality rates per 100,000, by sex, Maine, 2005-2009

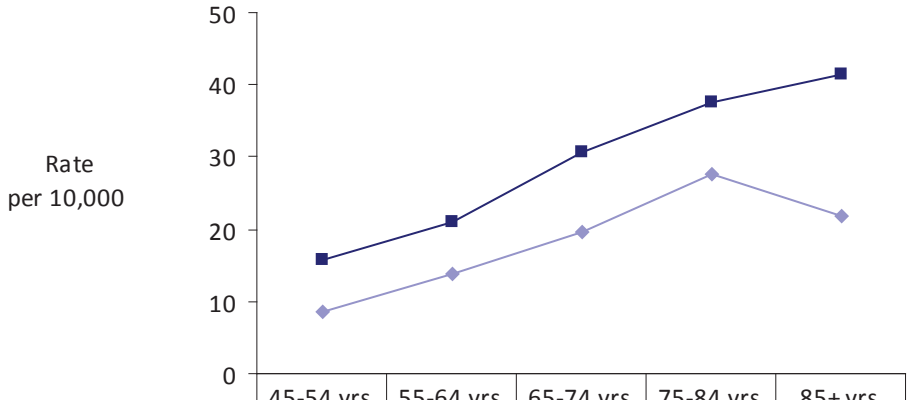


	45-54 yrs	55-64 yrs	65-74 yrs	75-84 yrs	85+ yrs
Female Rates	5.9	16.2	45.3	118.6	213.6
Male Rates	9.9	32.3	74.3	146.2	298.6

Source: Maine Vital Records Data[9]

Figure 3.20.

Age-specific diabetes hospitalization rates per 10,000, by sex, Maine, 2005-2009



	45-54 yrs	55-64 yrs	65-74 yrs	75-84 yrs	85+ yrs
Female Rates	8.6	13.9	19.6	27.6	21.8
Male Rates	15.7	21.0	30.6	37.6	41.4

Source: Maine Hospital Discharge Data[10]

Oral Health

Oral health is related to a woman's overall health. Conditions such as diabetes, heart disease, HIV, cancer, as well as birth outcomes have been linked to poor oral health.[52] Women may be at greater risk for poor oral health because female hormones can lead to an increase in cold and canker sores, dry mouth, change in taste, and gum disease.[53] Some research suggests that poor oral health during pregnancy can contribute to poor birth outcomes, such as low-birth weight infants.[52]

Gum disease and tooth decay are the most common oral diseases, and are the leading causes of tooth loss.[54, 55] The prevalence of tooth decay and cavities increases with age.[54] Lower-income, Mexican-American and African-American children and adults have more untreated decayed teeth compared to individuals who are non-Hispanic White or have higher incomes.[54] Loss of teeth results in poor diet because individuals may avoid eating fruits and vegetables since they are able to eat only soft foods.[55]

Taking good care of your teeth and gums can help you avoid or lessen oral health problems. Gum disease can be prevented and controlled by:[56]

- Drinking fluorinated water and using fluorinated toothpaste
- Brushing and flossing teeth
- Avoiding tobacco, limiting alcohol and eating wisely
- Visiting a dentist regularly

Prevalence

Sex

In 2006 and 2008 more than 1 in 5 Maine women aged 65 years or older had had all of their natural teeth extracted. There was no significant sex difference on this indicator (Table 3.12).[16]

Table 3.12. Adults aged 65+ who have had all of their natural teeth extracted by sex, U.S. and Maine, 2006 and 2008.

	Maine Females		US Females	Maine Males	
Year	%	(95% CI)	Median % *	%	(95% CI)
2006	27.9	(23.8-32.0)	20.2	23.9	(18.6-29.2)
2008	22.8	(20.2-25.5)	19.7	20.6	(17.2-23.9)

Source: BRFSS[16]
*Based on 51 states

In 2008, about 1 out of 4 Maine women had not visited the dentist within the previous 12 months (26.5%; Table 3.13).[16]

Table 3.13. Adults who did **not** visit a dentist in the past year by sex, U.S. and Maine, 2006 and 2008.

	Maine Females		US Females	Maine Males	
Year	%	(95% CI)	Median % *	%	(95% CI)
2006	27.3	(24.9-29.7)	27.8	31.1	(28.4-33.8)
2008	26.5	(24.8-28.3)	27.1	30.7	(28.4-33.0)

Source: BRFSS[16]
*Based on 51 states

Age

Maine Women over 75 years old were more likely to have had all their teeth extracted than those aged 65-74 (Table 3.14). This difference was significant for females, but not for males.[16]

Table 3.14. Adults aged 65+ who have had all their natural teeth extracted by age and sex, Maine, 2006 and 2008.

	Females		Males	
Age	%	(95% CI)	%	(95% CI)
65-74	21.4	(18.2 - 24.6)	20.6	(17.0 - 24.3)
75+	28.9	(25.2 - 32.5)	24.3	(18.9 - 29.7)

Source: BRFSS[16]

The percent of Maine women who did not see a dentist within the past year ranged from 20.6% to 36.7% depending on the age group. Women over age 75 were less likely than other age groups to have seen a dentist in the past year. About than 1 in 3 older women (aged 65+) had not seen a dentist in the past year. Among younger age groups (i.e., 25-44 years), women were more likely than men to have seen a dentist in the previous year (Table 3.15).[16]

Table 3.15. Adults who did **not** visit a dentist in the past year by age and sex, Maine, 2006 and 2008.

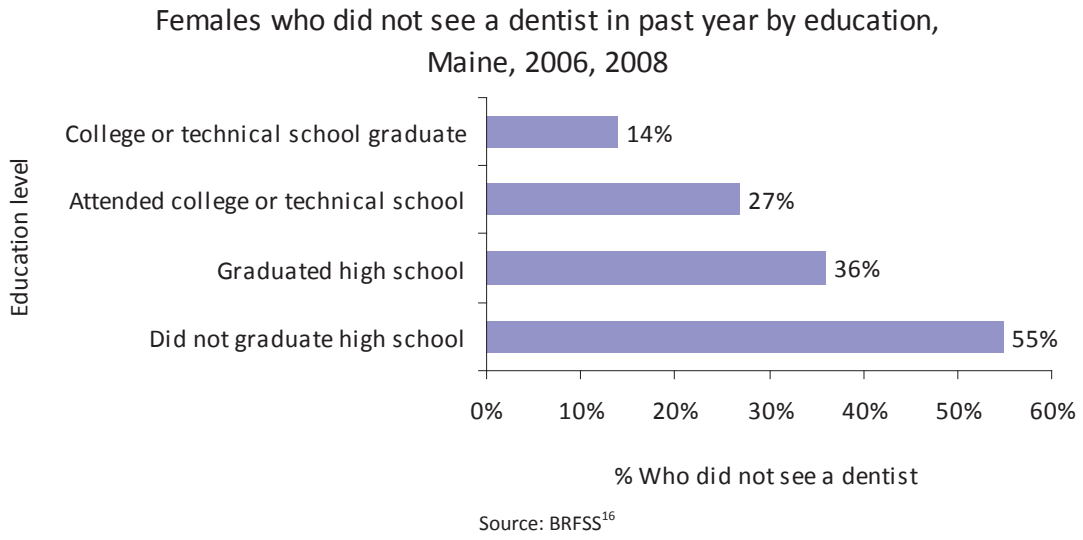
	Females		Males	
Age	%	(95% CI)	%	(95% CI)
18-24	31.7	(23.3 - 40.2)	32.2	(24.4 - 40.1)
25-34	28.9	(25.0 - 32.9)	39.9	(34.2 - 45.5)
35-44	20.6	(17.8 - 23.4)	31.2	(27.3 - 35.1)
45-54	22.2	(19.8 - 24.6)	25.5	(22.4 - 28.7)
55-64	25.9	(23.2 - 28.6)	26.6	(23.5 - 29.7)
65-74	31.0	(27.6 - 34.4)	34.1	(29.9 - 38.4)
75+	36.7	(32.9 - 40.5)	31.1	(25.4 - 36.7)

Source: BRFSS[16]

Education Level

The prevalence of Maine women who did not see a dentist in the past year decreased as their number of years of education increased. Over half of women who did not graduate high school did not see a dentist in the past year. This difference was statistically significant when compared to other levels of educational attainment (Figure 3.21).[16]

Figure 3.21.

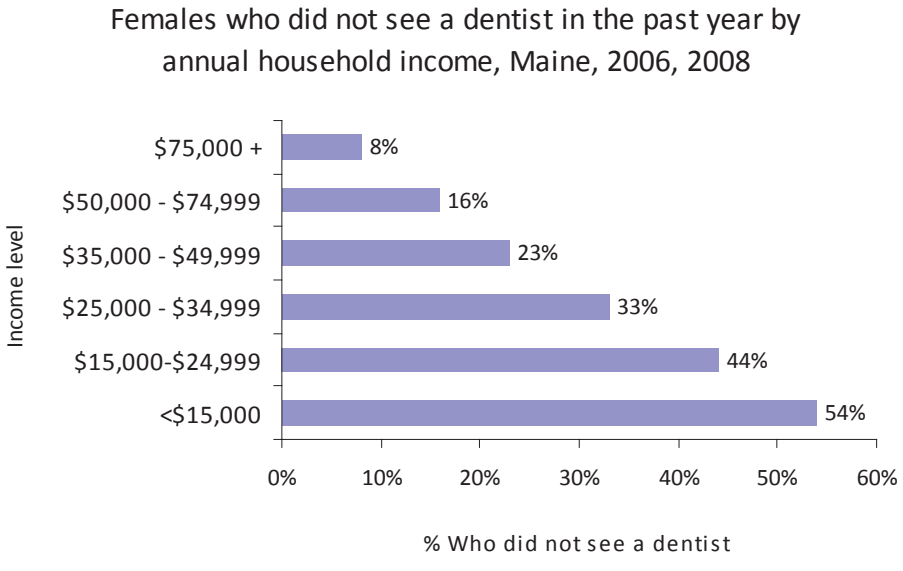


Source: BRFSS[16]

Income

Maine women with higher annual household income were more likely to see a dentist than those with lower income. More than half of women with an annual household income <$15,000 had not seen a dentist in the past year, compared to 8% of women with annual household incomes of $75,000 or more (Figure 3.22).[16]

Figure 3.22.



Source: BRFSS[16]

Public Health District

Among Maine women, there were no significant differences in the percent of women who had visited a dentist in the past year across public health districts. In Western district, men were less likely than women to have visited a dentist within the past year (Table 3.16).[16]

Table 3.16. Adults who did **not** visit a dentist in the past year by public health district and sex, Maine, 2006 and 2008.

	Females		Males	
PH District	**%**	**(95% CI)**	**%**	**(95% CI)**
Aroostook	31.2	(25.0 - 37.4)	38.7	(31.1 - 46.3)
Cumberland	21.7	(17.4 - 26.1)	24.2	(19.6 - 28.7)
Central	28.9	(25.0 - 32.8)	37.8	(32.4 - 43.2)
Downeast	31.1	(26.7 - 35.9)	30.0	(24.7 - 35.3)
Midcoast	26.4	(23.4 - 29.4)	28.6	(24.8 - 32.5)
Penquis	28.8	(24.8 - 32.8)	33.3	(28.2 - 38.4)
Western	27.6	(24.2 - 31.1)	36.5	(31.5 - 41.4)
York	24.7	(20.6 - 28.8)	23.1	(18.5 - 27.8)

Source: BRFSS[16]

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